

THE NORTH AMERICAN SPECIES OF TELEONEMIA OCCURRING NORTH OF MEXICO.

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The genus *Teleonemia* of Costa belongs to that group in the family Tingidæ (Hemiptera-Heteroptera) which have the nervures or veins of the delicate lace-like structure much thickened and the peculiar lacy appearance which is so characteristic of the family is somewhat obscured. In the culmination of species the genus, no doubt, attains its maximum in the warmer climates, both tropical and subtropical America being represented by a number of closely allied forms; in fact it seems to be the genus which is most characteristic of the family Tingidæ of tropical America. The most northern localities represented by specimens before me are Utah, Kansas, Missouri and both North and South Carolina. Stal (1873, p. 131) enumerates eleven species, two from North America and nine from South America. Two species are listed by Uhler (1886, p. 22) for North America, *elongata* being a manuscript name. Champion (1898a, p. 34) gives fourteen species for Mexico and Central America, twelve being described as new. Both Banks (1910, p. 57) and Van Duzee (1917a, p. 26 and 1917b, p. 221) catalogue five species that have been taken north of Mexico. The present paper includes eight North American species that occur north of Mexico, *schwarzi*, *consors*, and *barberi* being described herein as new.

Material Examined: The author is very much indebted to Professors Lovett, Ayers, Dean, Osborn, Ferris, Van Duzee, Johannsen and Knight for the loan or presentation of specimens of *Teleonemia*. Many thanks are also due to Mr. Edmund Gibson who has very kindly permitted the writer to study the determined species as well as the undetermined specimens in the National Museum.

According to Champion (1898a, p. 34) and Van Duzee (1917b, p. 221) the bibliography and synonymy of the genus *Teleonemia* may be stated as follows:

Genus **Teleonemia** Costa.Type *funera* Costa.

- Costa, Annuario del Museo Zoologico della R. Università di Napoli, II, p. 144, 1864.
- Stål, Enumeratio Hemipterorum, III, pp. 122 and 131, 1873.
- Champion, Biologia Centrali-Americana, Rhynchota, II, p. 34, 1898.
- Champion, Transactions of the Entomological Society of London for 1898, p. 61.
- Distant, Fauna of British India, Rhynchota, II, p. 142, 1903 (names *funera* Costa type).
- Van Duzee, Catalogue of the Hemiptera of America North of Mexico, p. 221, 1917.
- Americia* Stål, Enumeratio Hemipterorum, III, p. 131, 1873 (subgenus of *Tingis*; type, *albilatera* Stål.
- Amaurosterphus* Stål, Enumeratio Hemipterorum, III, p. 131, 1873 (subgenus of *Teleonemia*; haplotype, *morio* Stål.
- **Lasiacantha* Lethierry et Severin, Catalogue Général des Hémiptères, III, p. 18, 1894 (in part).

Narrow and elongate in shape. Head usually with five spines, the spines arranged as in related genera; bucculae closed in front; antenniferous tubercles somewhat prolonged, obtuse. Antennae rugulose, distinctly or indistinctly pilose, contiguous at the base; first and second segments short; third segment long, cylindrical or subcylindrical, obliquely truncate at the tip; fourth segment moderately long, more or less lanceolate or ovate. The length of the antennae varies in different species and sometimes a little in the same species. Rostral groove uninterrupted, the rostrum varying in length in different species. Pronotum tricarinate; paranota narrow, uniseriate (except in *schwarzi*), folded back against or nearly against the pronotum proper; in *schwarzi* the paranota are almost wanting, barely more than carinate and with only two or three exceedingly narrow areolae near the anterior margin. Metasternal orifices distinct. Hood indistinct or entirely wanting, but quite large in some Mexican and Central American species. Elytra extending considerably beyond the apex of the abdomen; discoidal and sutural areas co-elevated; costal and subcostal areas varying in width and number of rows of areolae in different species. Wings present.

KEY TO THE AMERICAN SPECIES OF TELEONEMIA OCCURRING NORTH OF MEXICO.

- 1—Subcostal area almost entirely biseriate.....2.
- Subcostal area uniseriate throughout.....6.
- 2—Rostrum very long, extending beyond the apex of the rostral sulcus.....4.
- Rostrum much shorter, extending to or very slightly beyond the meso-metasternal suture.....3.
- 3—Antennae varying slightly in length, usually barely reaching the base of elytra, the third segment less than twice the length of the fourth; paranota with distinct areolae.....*T. nigrina* Champion
- Antennae barely reaching the base of the elytra, the third segment slightly more than twice the length of the fourth; paranota almost wanting, scarcely more than carinate.....*T. schwarzi* sp. new.
- 4—Insects 4 mm. or more in length; antennae moderately stout, very slightly pilose; lateral carinae diverging posteriorly.....5.
- Smaller insects, about 3.8 mm. long; antennae rather slender, distinctly and quite densely pilose; lateral carinae parallel.....*T. consors* sp. new.

* Name cited in error.

- 5—Costal area uniseriate throughout or uniseriate to beyond the middle and irregularly biseriate for a short distance towards the apex; general color testaceous or brownish testaceous, the elytra mottled with fuscous or blackish.....*T. variegata* Champion.
 —Costal area uniseriate throughout; general color dark brown or fuscous-brown; third antennal segment becoming slightly smaller distally and about three times the length of the fourth.....*T. barberi* sp. new.
 6—Discoidal area finely pubescent; costal area with rather large areolæ; antennæ reaching slightly beyond the base of the elytra, shortly pilose.....*T. scrupulosa* Stal.
 —Discoidal area glabrous; costal area with small or very small areolæ; antennæ reaching beyond the base of the elytra, indistinctly pilose.....7
 7—General color testaceous or brownish testaceous, the elytra usually mottled with fuscous; costal area with small or very small areolæ; antennæ rather stout; anterior margin of pronotum slightly rounded, the median carina slightly elevated anteriorly.....*T. sacchari* Fabricius.
 —General color whitish testaceous, sometimes slightly mottled with brown; costal area with larger areolæ; anterior margin of the pronotum nearly triangular, the median carina distinctly elevated anteriorly; antennæ rather slender.....*T. belfragei* Stal.

Teleonemia nigrina Champion.

Teleonemia nigrina Champion, Biologia Centrali-Americana, Rhynchota, Hemiptera-Heteroptera, Vol. II, p. 41, Tab. III, Figs. 13, 13a and 13b. *Monanthia nigrina* Uhler MS. (Texas specimen in the British Museum).

Form moderately elongate, narrow; head with rather short, blunt and more or less prominent median spine. Antennæ rather short, slightly variable in length, usually barely reaching the base of the elytra, the third segment less than twice the length of the fourth. Rostrum extending to the meso- metasternal suture, the rostral groove abruptly and greatly widened on the metasternum. General color above grayish or brownish gray, the elytra mottled with black, the body beneath black or piceous. Pronotum rather finely punctate, subtruncate in front, rather sharply tricatinate, each carina with a row of small areolæ. Elytra moderately long, slightly constricted beyond the middle; costal area uniseriate, the areolæ long, narrow and separated by strong transverse nervures; subcostal area biseriate. In typical specimens the terminal ventral segment in the female is armed with a long, stout, obliquely projecting tubercle on each side. Length 3-3.6 mm.; width 1-1.5 mm.

Mexico, Guatemala and Texas (Champion, 1898a, p. 41); New Mexico (Uhler, 1904, p. 362); Texas (Barber, 1906, p. 281); California (Van Duzee, 1914, p. 11). I have before me over 250 specimens of *nigrina*, representing a great number of different localities in Texas, New Mexico, Arizona and California, also specimens from Kansas, Utah, Missouri, Arkansas, Georgia, North Carolina and South Carolina.

Van Duzee (1914, p. 11, and 1917c, p. 261) states that *nigrina* is "a common species everywhere in California" and has taken it in San Diego County feeding upon *Rhus laurina* and a leguminose plant allied to alfalfa. Specimens are at hand that bear the food plant labels as follows: Sugar beets (Spreckles, California, Sept. 20, 1904, collected by E. S. G. Titus); *Adenostegia* (*Cordylanthus*) *filifolia* (Campa, California, July 29, 1917, by W. D. Pierce); *Adenostegia pilosa* (Permanente Cr., Santa Clara County, California, August 12, 1917, by G. F. Ferris, who states "It occurs in great numbers on both the leaves and flowers of its host plants"); *Sphaeralcea angustifolia* (Rio Grande, Brewster County, Texas, by Mitchell and Cushman); *Verbena* (Marion County, Arkansas, July 15, by Mr. McElfresh, also Riley County, Kansas, September and October, by Mr. J. B. Norton); *Helenium tenuifolium* (Wolf Creek, Texas, August 5, 1906, by Dr. F. C. Bishop).

I have seen specimens of *nigrina* Champion labeled "*Teleonemia elongata* Uhler MS.," and this is probably the species listed by Uhler (1886, p. 22) and Smith (1909, p. 149) and Van Duzee (1917b, p. 222). The antennæ are slightly variable in length, but the third segment is always less than twice the length of the fourth. Van Duzee (1917c, p. 261) states, "Some of the females taken in company with the typical form have mere tubercles on the last ventral segment in place of the prominent horn-like processes figured by Champion." The tubercles of genital segment vary in size in the same specimen and sometimes they are entirely wanting.

***Teleonemia schwarzi* sp. new.**

Moderately elongate, rather small; elytra testaceous, the nervures variegated with brownish fuscous. Head black, armed with short slender spines, the two frontal spines converging and the median spine very short or almost entirely wanting. Eyes black. Pronotum coarsely punctate, black or reddish black, the pubescence whitish, the surface of the disc shining; tricarinate, each carina very low and thin, the median carina with barely distinct areolæ, the lateral carinæ slightly diverging anteriorly and without distinct areolæ; paranota almost wanting, barely carinate. In some specimens the pubescence on the pronotum seems to be almost entirely rubbed off and disc is shining and appears much like the dorsal surface of the body in the genus *Alveotigis* O. & D. Rostral groove much widened on the metasternum, the rostrum extending to the meso- metasternal suture. Body beneath black or reddish black, the pubescence rather sparse and

whitish. Rostral laminae yellowish brown. Legs reddish black or reddish brown, the distal portion of tibiae somewhat testaceous; apex of tibiae and tarsi blackish. Length, 2.64 mm.; width, .86 mm.

Antennae barely reaching the base of the elytra, moderately strong, densely and rather longly pilose, dark brown; first and second segments very short, nearly equal in length; third segment a little more than twice the length of the fourth; fourth segment subequal to the length of the first and second conjoined. Elytra slightly narrowed beyond the middle, rounded at the apices; costal area narrow, uniseriate, the areolae long narrow and separated by strong transverse nervures; subcostal area almost entirely biseriate. Wings a little longer than the abdomen.

Several specimens: San Diego (April, Coquillett) and Palm Springs (January 18 and March 9, Hubbard) California; Santa Rita Mountains, Arizona, collected by Dr. Schwarz. The species is named in honor of Dr. E. A. Schwarz of the National Museum, who has collected a great number of specimens of *Teleonemia* and other Tingidae. *Type* in the National Museum, Washington, D. C. *Paratypes* in the National Museum, the California Academy of Science, Cornell University and the author's private collection.

***Teleonemia consors* sp. new.**

Form similar to *variegata* Champion, but somewhat smaller. Antennae rather slender, quite densely and distinctly pilose; first segment slightly longer than the second; third segment a little more than three times the length of the fourth. Pronotum nearly truncate in front, sparsely pubescent, distinctly tricarinate, the lateral carinae parallel; paranota turned back against the pronotum proper. Rostral groove gradually widening posteriorly, the rostrum extending beyond the first ventral suture. General color fuscous or dark testaceous, the nervures partially darkened, the areolae more or less grayish; body beneath brownish fuscous or blackish, the pubescence sparse and grayish. Legs dark fuscous or reddish fuscous with the tarsi darker. Rostral laminae yellowish brown. Elytra long, somewhat oval in shape; costal area uniseriate, the areolae rather large and mostly transparent; subcostal area biseriate; discoidal area large, widely reticulated. The elytra, except sutural area, are sparsely pubescent. Wings a little longer than the abdomen. Length, 3.5-3.6 mm.; width, 1.52 mm.

Six specimens; Bonita, Post Cr. Can., Arizona, July 16, 1917, by Mr. H. H. Knight; Oracle, Arizona, July. *Type* in author's collection. *Paratypes* in collection of H. H. Knight, Cornell University (Heidemann Collection) and author's collection.

Somewhat allied to *variegata* Champion and *pilicornis* Champion, but readily separated from the former by characters given in the key and from later by its shape, much longer rostrum, etc.

Teleonemia barberi sp. new.

Closely allied to *variegata* Champion, but readily separated from it by the much darker color, the uniseriate costal area, the much slender spines on the head and the shorter third antennal segment.

Elongate, rather broad, slightly smaller than *variegata* Champ., general color dark fuscous or dark brownish testaceous and slightly mottled with blackish. Pronotum subtruncate in front, very coarsely punctate, distinctly tricarinae, the outer carinae divaricating posteriorly, the carinae without distinct areolae. Rostrum extending to the posterior margin of the first ventral segment. Antennae stout, slightly pilose, rather long; third segment subcylindrical, almost three times the length of the fourth. Elytra similar in shape to *variegata*, the subcostal area biseriate, the costal area rather broad and uniseriate. Length, 3.9-4 mm.; width, 1.1-1.25 mm.

Numerous specimens, collected on "desert willow," *Chilopsis*, in the Huachuca Mts., Arizona, July 23, by Prof. H. G. Barber. I have also a single specimen from Valentine, Texas, July 8, 1917, that was collected by Dr. J. Bequaert.

Type in the collection of H. G. Barber. *Paratypes* in the collections of Cornell University, H. G. Barber and the author.

Teleonemia variegata Champion.

Teleonemia variegata Champion, Biologia Centrali-Americana, Rhynchota, Hemiptera-Heteroptera, Vol. II, p. 42, Tab. III, Figs. 15 and 15a, 1898.

Elongate, rather broad, the largest species in the genus occurring north of Mexico. General color testaceous or brownish testaceous, the elytra mottled with fuscous or black; body beneath reddish brown or fuscous. Head with moderately slender or quite stout spines, the spines varying slightly in length in different specimens, the frontal spine either porrect or adpressed against the head. Pronotum coarsely punctate, tricarinate, the carinae without distinct areolae, the median carina not raised anteriorly; paranota turned back against the pronotum proper. Antennae moderately stout, slightly pilose, long, the third segment from three to three and a half times the length of the fourth. Rostral groove gradually widening posteriorly, the rostrum extending to or a little beyond the second ventral suture. Elytra long, somewhat

oval in shape; costal area prominent, entirely uniseriate or uniseriate to beyond the middle and irregularly biseriate for a short distance towards the apex, the areolæ large. Legs sometimes marked or slightly annulated with fuscous, the tarsi black; apical segment of the antennæ partly or entirely fuscous. Length, 4.1–4.5 mm.; width, 1.3–1.88 mm.

Barber (1910, p. 38) first records this species north of Mexico from specimens taken in the Huachuca Mts., Arizona. Champion (1898a, p. 42) describes the species from specimens taken in Mexico (Omiteme in Guerrero, 8,000 feet) and Guatemala (Capetillo, 4,000 feet). I have examined specimens from Prescott and Huachuca Mts. (Barber, collector), Arizona and Cordoba, Mexico (Fred Knab, collector).

Teleonemia scrupulosa Stal.

Teleonemia scrupulosa Stal, Enumeratio Hemipterorum, Band, III, p. 132, 1873. *Teleonemia scrupulosa* Champion, Biologia Centrali-Americana, Rhynchota, Vol. II, p. 40, Tab. III, Figs. 12 and 12a, 1898.

Moderately elongate, rather narrow. General color dark gray or brownish, the elytra with darker markings, the pubescence whitish. Antennæ stout, moderately long, distinctly pilose, the third segment a little less than three times the length of the fourth. Rostrum extending to the meso- metasternal suture, the rostral groove gradually widening behind the anterior coxæ. Pronotum with the carinæ moderately elevated and uniseriate, the paranota uniseriate, not quite turned back against the dorsal surface of the pronotum. Elytra constricted back of the middle and widening towards the apices, with a transverse fascia before the apex; costal area moderately broad, the areolæ rather large and hyaline; discoidal area finely pubescent, the outer margin curved or sometimes nearly straight; subcostal area uniseriate. Length, 3.25–3.9 mm.; width, 1.1–1.3 mm.

Champion (1898a, p. 41) reports this species as the most common *Teleonemia* occurring in Mexico and Central America. Numerous records have been published for the West Indian Islands and the tropical and subtropical regions of both North and South America by Stal (1873, p. 132), Champion (1898a, p. 40) and Van Duzee (1907, p. 22). Barber records the species for Florida (1914, p. 507) and Texas (1906, p. 281). Seventy-six specimens are at hand, representing the following localities: Grenada, Jamaica, Guatemala, Mexico, Hayti, Florida and many records from Texas.

Scrupulosa has been taken on mint (Prof. Ayers) and poppy mallow, *Callirhoe involucrata*, (Mr. J. D. Mitchell) in Texas.

As stated by Champion (1898a, p. 41) the shortly pilose antennæ and pubescent discoidal area are the principal characters of the species.

Teleonemia sacchari Fabricius.

Acanthia sacchari Fabricius, Entomologia Systematica, Tom. IV, p. 77, 1794 ("Habitat in Americæ meridionalis Insulis"). *Tingis sacchari* Fabricius, Systema Rhyngotorum, p. 126, 1803. *Monanthia sacchari* Herrich-Schaffer, Die Wanzenartigen Insecten, p. 85, V, Tab. CLXXIII, Fig. 533, 1839. *Monanthia sacchari* Fieber, Entomologische Monographie, p. 76, Tab. VI, Figs. 22-25, 1844.

Antennæ slender, indistinctly pilose, brownish, the apical segment sometimes partially or entirely dark brown or fuscous; third segment a little less than three times the length of the fourth; fourth segment slightly longer than the first and second taken together. Head reddish brown, the median spine semi-erect and the dorsal spines a little longer than in *belfragei*. General color brown, the elytra more or less variegated with fuscous, the body beneath reddish brown. Pronotum sparsely pubescent, brown or reddish brown, the carinæ uniseriate, a little thicker and not so highly elevated as in *belfragei*. Median carina much less elevated anteriorly and the anterior margin of pronotum more rounded than in *belfragei*. Legs pale brown, the tips of tibiae and tarsi black. Elytra with the costal area narrow, the areolæ long and very narrow; subcostal area biseriate; discoidal area glabrous. Length, 3.7-3.85 mm.; width, 1-1.2 mm.

Brazil and Mexico (Fieber, 1844, p. 76, and Herrich-Schaffer, 1839, p. 85); Cuba and Island of St. Bartholomew (Stal, 1873, p. 132); Lower California? (Uhler, 1894a, p. 278); Jamaica (Van Duzee, 1907, p. 22); Balthazar, Is. St. Vincent (Uhler, 1894b, p. 202-203, *in part*); Biscayne Bay and Key West, Florida (Barber, 1914, p. 507). Of this species I have examined twenty-nine specimens, representing the following localities: Island of St. Vincent, Grenada, Cuba, Jamaica (Mandeville, Van Duzee coll.) and Florida (Key West, Jan. 30, 1869, L. Worth, Feb. 6, 1887, and Biscayne, Sept. 20, 1889).

The general color, length of the antennæ and width of the costal area is somewhat variable in this species. In a series of specimens from Grenada the third segment of the antennæ varied .28 mm. in length. In most specimens the areolæ in the costal area are very narrow.

Teleonemia belfragei Stal.

Teleonemia belfragei Stal, Enumeratio Hemipterorum, Band. III, p. 132, 1873. Champion, Transactions of the Entomological Society of London for 1898, p. 62, Pl. III, Fig. 8.

General color whitish testaceous; head, pronotum anteriorly and body beneath slightly tinged with ferruginous; elytra usually with a few brown or fuscous spots on the nervures. Antennæ slender, indistinctly pilose, whitish testaceous, the apical segment brown or fuscous; first and second segments subequal; third segment nearly three times the length of the fourth; fourth segment subequal to the length of the first and second taken together. Pronotum sparsely pubescent, tricarinate, each carina uniseriate and strongly elevated; median carina elevated anteriorly, the anterior margin of the pronotum nearly triangular and projecting slightly over the base of the head. Head sparsely pubescent, the median spine suberect. Legs mostly pale testaceous, the tarsi black. Elytra with the costal area moderately broad, uniseriate, the areolæ hyaline, a little longer than broad, the transverse nervures strong, brown and usually four or five of them black. Rostrum extending slightly beyond the meso-metasternal suture. Length, 3.4–3.55 mm.; width, 1.1–1.25 mm.

Texas (type locality, Stal, 1873, p. 132). Florida: Crescent City, Sanford and Biscayne (Van Duzee, 1909, pp. 173-174); Crescent City, Biscayne Bay and Lakewood (Barber, 1914, p. 507). I have examined seven specimens from Jacksonville (Ashmead) and Crescent City, (Heidemann and Van Duzee) Florida.

The slender antennæ, the elevated median carina anteriorly, lighter color, etc., readily separate this species from *T. sacchari* Fabr. Numerous specimens taken at Gainesville, Fla., May 1918, have the elytra slightly mottled with brown. This is a very common species in Southeastern United States and feeds on the French mulberry, *Callicarpa Americana* in Florida.

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